

Skills Worksheet

Directed Reading

Section: Looking at Cells

In the space provided, write the letter of the measurement that best matches the term or phrase.

- | | |
|-----------------------------------|---------------------|
| _____ 1. height of a human | a. 2 cm |
| _____ 2. diameter of a penny | b. 2 μm |
| _____ 3. diameter of a blood cell | c. 2 m |
| _____ 4. length of a bacterium | d. 20 cm |
| _____ 5. length of a human hand | e. 10 μm |

In the space provided, explain how the terms in each pair differ in meaning.

6. magnification, resolution

7. light microscope, electron microscope

Read each question, and write your answer in the space provided.

8. What is the difference between a magnifying glass and a compound light microscope?

9. What is the difference between a transmission electron microscope and a scanning electron microscope?

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Section: Cell Features

Read each question, and write your answer in the space provided.

1. What is the cell theory?

2. Why can small cells exchange substances more readily than large cells?

3. What are prokaryotes?

4. What is the difference between flagella and cell walls?

5. How are cell walls important to bacterial cells?

In the space provided, write the letter of the description that best matches the term or phrase.

_____ **6.** eukaryote

a. short hairlike structures

_____ **7.** organelles

b. cell structures that carry out specific activities

_____ **8.** nucleus

c. houses the cell's DNA

_____ **9.** cilia

d. cells contain nuclei

Complete each statement by writing the correct term or phrase in the space provided.

10. The _____ of a phospholipid is polar, and the long _____ are nonpolar.

Directed Reading *continued*

11. The _____ is made of a double layer of phospholipids.

Read each question, and write your answer in the space provided.

12. What keeps proteins within the lipid bilayer?

13. What are the functions of the cell membrane?

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|-------------------------------|--|
| _____ 14. cell-surface marker | a. assists chemical reactions inside the cell |
| _____ 15. receptor protein | b. recognizes and binds to substances outside the cell |
| _____ 16. enzyme | c. helps substances move across the cell membrane |
| _____ 17. transport protein | d. identifies cell type |

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Section: Cell Organelles

Read each question, and write your answer in the space provided.

1. What two substances are made in the nucleus and move into the cytoplasm?

2. What substance is stored in the nucleus?

In the space provided, write the letter of the description that best matches the term or phrase.

_____ 3. endoplasmic reticulum

a. packages and distributes proteins

_____ 4. Golgi apparatus

b. small membrane-bound sac

_____ 5. vesicle

c. internal membranes that move substances through the cell

_____ 6. lysosomes

d. small organelles that contain digestive enzymes

Read each question, and write your answer in the space provided.

7. What is ATP?

8. What function do mitochondria perform?

In the space provided, write *Plants* if the structure is found in plant cells only.

Write *Both* if the structure is found in both plant cells and animal cells.

_____ 9. cell membrane

_____ 12. cell wall

_____ 10. ribosomes

_____ 13. mitochondria

_____ 11. nucleus

_____ 14. chloroplasts

Answer Key

Directed Reading

SECTION: LOOKING AT CELLS

1. c
2. a
3. e
4. b
5. d
6. Magnification is the ability to make an image larger. Resolution is a measure of the clarity of an image.
7. A light microscope uses light to produce a magnified image of an object. An electron microscope uses a beam of electrons to produce a magnified image of an object.
8. A magnifying glass has one lens, but a compound microscope has at least two lenses.
9. The electron beam of a transmission electron microscope passes through the specimen. The electron beam of a scanning electron microscope bounces off the specimen.

SECTION: CELL FEATURES

1. The cell theory states that all living things are made of one or more cells, that cells are the basic units of structure and function in organisms, and that all cells arise from existing cells.
2. Small cells can exchange substances more readily than large cells can because small objects have a higher surface area-to-volume ratio.
3. Prokaryotes are single-celled organisms that lack nuclei and other internal compartments.
4. Flagella are long, threadlike structures that protrude from the surfaces of cells and enable movement. Cell walls are structures that surround cell membranes and provide structure and support.
5. They provide structure and support.
6. d
7. b
8. c
9. a

10. head, tails
11. lipid bilayer
12. The middle part of a membrane protein is nonpolar, and it is therefore attracted to the nonpolar phospholipid tails in the interior of the lipid bilayer. The outer parts of a membrane protein are polar, and they are therefore attracted to the polar water molecules on either side of the lipid bilayer.
13. Cell membranes enclose cells, separating their contents from their surroundings, and regulate the entry and exit of substances.
14. d
15. b
16. a
17. c

SECTION: CELL ORGANELLES

1. RNA and ribosomal proteins
2. DNA
3. c
4. a
5. b
6. d
7. ATP is an organic molecule that acts as the main energy currency of cells.
8. Mitochondria harvest energy from organic compounds and transfer the energy to ATP.
9. Both
10. Both
11. Both
12. Plants
13. Both
14. Plants

Active Reading

SECTION: LOOKING AT CELLS

1. SI is the abbreviation for the International System of Measurements, which is the official name of the metric system.
2. SI is a decimal system.
3. the SI unit of length, or the meter, to express the length of objects
4. to indicate the relationship of that unit to a base unit